

**AMENDMENTS TO THE CLAIMS**

The listing of claims will replace all prior versions, and listings, of claims in the application. Please amend Claims 109-111 and 114-115 as follows:

Listing of Claims:

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Claims 1-108 (canceled)

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Claim 109 (currently amended): An isolated PAPS3'-phosphoadenosine-5' phosphosulfate (PAPS) synthetase protein having an amino acid sequence of SEQ ID NO:7[[],]  
~~or an antibody binding fragment thereof at least 6 amino acids long.~~

Claim 110 (currently amended): A PAPSS2~~human~~ 3'-phosphoadenosine-5'-phosphosulfate synthetase (PAPSS2) fusion protein, comprising:

a first PAPSS2 polypeptide segment comprising an amino acid sequence of SEQ ID NO:7~~or a gene specific antibody binding fragment thereof at least 6 amino acids long;~~ and  
a second predetermined polypeptide segment.

Claim 111 (currently amended): The fusion protein of Claim 110, wherein the PAPSS2 polypeptide segment is encoded by a nucleic acid segment having a nucleotide sequence of SEQ ID NO:9~~or a gene specific fragment thereof~~, or by a degenerate sequence of either of these.

Claims 112-113 (canceled)

Claim 114 (currently amended): The PAPSS2 fusion protein of Claim 110, wherein the second polypeptide segment is an human immunodeficiency virus ~~TATTat~~ protein.

Claim 115 (currently amended): The PAPSS2 fusion protein of Claim 111, wherein the second polypeptide segment is an human immunodeficiency virus ~~TATTat~~ protein.

Claims 116-120 (canceled).